THE MINERAL INDUSTRY OF MALAYSIA

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Malaysia is located next to Brunei, Indonesia, Singapore, and Thailand in Southeast Asia and is a member of the Association of Southeast Asian Nations (ASEAN). It has a total land area of about 328,600 square kilometers (km^2) and a population of about 25.6 million. In 2004, the Malaysian economy expanded by 7.1%, which was the highest annual rate of growth since the financial crisis in 1997. The gross domestic product (GDP) grew to $118.3 billion and the GDP per capita was $4,619 (Department of Statistics, 2005§[1]). Because the outbreak of severe acute respiratory syndrome (SARS) in Asia was contained and the Government issued various tax rebates and lowered interest rates in 2003, consumer confidence rebounded. Private consumption also contributed to the strong economic growth. During the year, all sectors except construction registered positive growth. Manufacturing production grew by only 9.8% because of the slowdown in global demand in semiconductors during the second half of the year. The rate of growth in the mining sector increased by 4.1% and was driven by higher outputs of natural gas and crude oil. The mining sector contributed 7.0% to the GDP and the natural gas and oil sector accounted for 95% of that contribution. As a result of the completion of several large infrastructure projects, the construction sector contracted by 1.9% in 2004 (Bank Negara Malaysia, 2005).

Government Policies and Programs

Because of the economic slowdown of the past several years, the Government focused on providing infrastructure and a better investment environment. The Government reformed the banking system and improved the delivery of Government services by reducing red tape and lowering the cost of doing business in Malaysia. The Government moved from supporting large prestige projects to funding smaller ones that have a higher multiplier effect and has put greater emphasis on diversifying sources of growth into sectors such as services and agriculture (Bank Negara Malaysia, 2005).

Malaysia is a federation that consists of 14 States and 3 Federal territories. Mineral resources belong to the States and each State takes responsibility for the approval and issuance of exploration licenses and mining rights within its border. In the late 1980s, owing to a decline in metal prices, many tin mines were shut down. During the past couple of years, metal prices increased and the Federal Government urged the miners to revive their abandoned mines. The Government also focused on developing the country's industrial mineral resources. The Federal Government urged the State governments to join in developing the mining sector and encouraged the States to issue more mining licenses in Malaysia (Malaysian Tin Bulletin, 2004).

Production

Malaysia produced bauxite, coal, feldspar, gold, ilmenite, iron ore, kaolin, mica, monazite, natural gas, oil, sand and gravel, struverite, tin, and zircon. Owing to higher tin prices in the Kuala Lumpur Tin Market and the international market, production of tin metal increased; because of depleting ore reserves and lower ore grades, however, output of tin concentrates dropped to a historical low. Because of increased demand for fertilizers from the plantation sector, the output of fertilizers increased. The shortage of steel products in the global market and the demand growth in the domestic market caused the Malaysian iron and steel sector to increase its output in 2004.

Trade

In 2004, Malaysia's total trade increased by 22.9% to $231.7 billion. Exports increased by 20.5% to $126.5 billion, and imports increased by 25.7% to $105.2 billion. The ASEAN countries, which remained Malaysia's largest export market, accounted for 25.5% of the total exports, of which Singapore received 15.0%. Other major export markets included the United States, 18.8%; Japan, 10.1%; China, 6.7%; and Hong Kong, 6.0%. Electrical and electronic products accounted for 64.1% of manufactured product exports. The share of mining products was 11.5% of the total exports. Exports of crude oil and liquefied natural gas (LNG) increased in 2004 compared with those of 2003. The export value of crude oil and LNG increased to $6.0 billion and $7.1 billion, respectively. Malaysia imported goods from ASEAN countries, 24.0%; Japan, 15.9%; the United States, 14.5%; China, 9.8%; and Taiwan 5.4%. Mining goods accounted for 6.6% of the total imports. The imported values of refined petroleum products and crude petroleum were $3.8 billion and $2.0 billion, respectively (Ministry of International Trade and Industry, 2005).

Besides oil and natural gas, Malaysia's mineral sector was small, and the country imported metallic and nonmetallic minerals to meet its demand. In 2004, total exports of major minerals were valued at $424 million, of which $289 million was for tin. Imports of major minerals totaled $1.1 billion. Iron and steel products were the leading traded mineral commodities followed by copper, gold, and aluminum (Minerals and Geoscience Department, 2004, p. 7-9; Ministry of International Trade and Industry, 2005).

[1]References that include a section mark (§) are found in the Internet References Cited section.

Commodity Review

Metals

Aluminum.—Malaysia bauxite resources are located at Bukit Batu, Bukit Gebong, Lundu-Semantan, and Tanjung Seberang in the State of Sarawak and at Bukit Mengkabau and Labuk Valley in the State of Sabah. The two operating bauxite mines in Malaysia were located at Bungai Rengit in the State of Johor. Owing to depleted resources, bauxite production decreased by more than 90% to about 2,000 metric tons (t) in 2004 from its highest level of 279,066 t in 1997 (Minerals and Geoscience Department, 2004, p. 12).

Malaysia did not have an aluminum smelter and imported unwrought aluminum to meet its demand. Investors from Bahrain, China, the United Arab Emirates, and the United States had submitted proposals to the Malaysian Government to build aluminum smelters in Malaysia. The 500,000-metric-ton-per-year (t/yr) aluminum project by Smelter Asia Sdn. Bhd. and its partners at Similajau in Sarawak was expected to begin construction in the second half of 2005 and to be completed by September 2007. The company projected that the smelter would produce 127,000 t of aluminum ingot in 2007 and would reach full capacity in 2011. Power for the smelter will be supplied by the Bakun hydroelectric powerplant. The company planned to source alumina from Australia and the United States (Minerals and Geoscience Department, 2004, p. 16).

Cahya Mata Sarawak Bhd of Malaysia and China's China Hydro Corp. and Shandong Luneng Group signed a memorandum of understanding to jointly build a 500,000-t/yr aluminum smelter in Sarawak. China Hydro and the Sime Darby Bhd-led Malaysian consortium were to jointly build the Bakun Dam in Sarawak, which would have a capacity of up to 2,400 megawatts of electricity. The construction cost of the Bakun Dam was estimated to be $1.8 billion, and that of the aluminum smelter, about $1 billion. The smelter was expected to begin producing aluminum ingot in 2007 (Malaysia Industrial Development Authority, 2005a§).

Gold.—In the past several years, Malaysia's gold production was about 4 t (table 1). Gold output was mainly from the Penjom Mine, which was owned by Avocet Mining PLC and operated by its wholly owned subsidiary Specific Resources Malaysia Sdn. Bhd.; the mine was located at Penjom in the State of Pahang. Several small-scale gold mines were located in the States of Kelantan, Pahang, and Terengganu.

Owing to downtime that resulted from maintenance and the installation of a new Knelson concentrator in 2004, mill output was down by 6% from the previous year. Also as a result of downtime, the output of gold from the Penjom Mine decreased slightly to 3,727 kilograms (kg) in the fiscal year that ended on March 31, 2005, from 3,869 kg in the fiscal year that ended on March 31, 2004. The average ore grade was 7.92 grams per metric ton (g/t) gold and the recovery rate was 89%; this output was higher than the average ore grade of 7.73 g/t and lower than the 90% rate of recovery during 2003. The production cost increased by 6% to $203 per ounce ($6.13 per gram). In 2004, Avocet continued its exploration activities near its mine site and identified additional resources in the central and northern sectors of the Kalampong pit area. The company increased its interest in Damar Consolidated Exploration Sdn Bhd to 100% from 62% for the cash payment of $300,000. Damar held the Buffalo Reef prospect, which is located about 40 kilometers northeast of Penjom. About 3 t of gold was identified near the surface and could be mined and processed for a modest capital cost. In 2005, Avocet planned to invest $1 million to explore around the Kalampong pit area (Avocet Mining PLC, 2005, p. 10-14).

Iron and Steel.—Malaysia produced small amounts of low-grade iron ore from the States of Pahang, Perak, and Terengganu. Domestic iron ore output was consumed by domestic pipecoating plants and cement plants. The country imported high-grade iron ore from Bahrain, Brazil, Canada, and Chile for ironmaking. State-owned Perwaja Steel Sdn. Bhd. produced direct-reduced iron (DRI) at the plant at Kemaman in the State of Terengganu; the plant had a designed output capacity of 1.2-Mt/yr. Lion Diversified Holdings planned to build a 1.54-Mt/yr DRI plant in Banting Salangor in 2005. Hot-briquetted iron (HBI) was produced by Amsteel Mills Sdn. Bhd. at the plant located on Labuan Island; the plant had a designed output capacity of 720,000 t/yr. Malaysia's production of DRI and HBI totaled 1.68 Mt in 2004 compared with 1.60 Mt in 2003 (Midrex Technologies, Inc., 2005).

The shortage and higher price of steel scrap in the international market affected the iron and steel industry in Malaysia. The country produced less than 5 Mt/yr of crude steel, but consumed about 8 Mt/yr; the shortage of crude steel was met by imports. Because of escalating crude steel and steel scrap prices on the international market, Malaysia's steel semimanufacturing producers operated below their designed output capacities. The major steel producers were Amsteel Mills, Antara Steel Mill Sdn Bhd., Malayawata Steel Bhd., Malaysia Steel Works (KL) Sdn. Bhd. (MSW), Perwaja Steel, and Southern Steel. The industry's total installed capacity of billet was 5.25 Mt in 2002; the capacity utilization, however, was about 60% during the past few years. Imports of billet were regulated by the Government and allowed only when there was a shortage of billet to meet domestic demand or certain grades of billet were not produced locally. Malaysia had a total rolling capacity for finished long products of about 7.2 Mt in 2003, but capacity utilization was about 50%. Domestic steel demand was expected to increase, and the tsunami disaster in neighboring countries, such as Indonesia and Thailand, was expected to benefit Malaysia's construction and building materials companies. The Malaysian Iron and Steel Industry Federation projected that Malaysia's steel consumption would be 8.8 Mt in 2005, 9.7 Mt in 2006, and 10.6 Mt in 2007 (Malaysian Iron and Steel Industry Federation, 2003, p. 31-80).

MSW had two plants—a 250,000-t/yr rolling mill in Petaling Java and a 350,000-t/yr crude steel plant in Bukit Raja. The capacity utilization rate of the crude steel plant was about 67% in 2004. The rolling-mill capacity utilization rate to produce high-tensile deformed bars and round bars was about 62%. MSW exported about 30% of its products to ASEAN markets. MSW planned to invest $31.6 million to add a 150,000-t/yr rolling mill at Bukit Raja in the State of Klang. The new rolling mill would produce high-quality steel products, which would include angles, flat bars, and wire rods. Construction of the new mill was scheduled to begin in 2005 and to be completed in 2007 (Malaysia Industrial Development Authority, 2005b§).

Tin.—Owing to depleted resources and lower ore grades, Malaysia's tin mine production continued to decline despite a higher tin price in 2004. The Malaysian Chamber of Mines planned to review a 5-year plan to revive Malaysia's dwindling tin mining sector.

Malaysia's major tin deposits are located along the western coast of Peninsular Malaysia in the States of Perak and Selangor. At yearend 2004, the stock of tin in the London Metal Exchange (LME) warehouse declined to 8,160 t, which was the lowest level in 5 years. In the Kuala Lumpur Tin Market (KLTM) and the LME, the average tin price rose to about $8,500 per metric ton in December 2004 from about $6,000 per metric ton in December 2003. The total number of operating tin mining areas in Malaysia decreased to 23 in 2004 from 26 in 2003 (Malaysian Tin Bulletin, 2005).

After the closure of Escoy Smelting Sdn Bhd in 1998, Malaysia Smelting Corp. Bhd. (MSC) was Malaysia's sole integrated tin producer and the leading tin metal producer in the world. In 2004, MSC produced a total of 57,270 t of tin ingot from its two smelters, Butterworth in Malaysia (33,740 t) and PT Koba Tin in Indonesia (23,530 t). MSC Straits' refined tin brand, which was registered at KLTM and LME, ranged in purity from the standard grade A (99.85% Sn) to the premium grade electrolytic tin (99.99% Sn). To secure tin resources, MSC expanded its investments in Indonesia through its subsidiary PT MSC Indonesia and increased its interest in Bluestone Tin's Renison Bell tin mine in Tasmania, Australia. In 2004, Malaysia consumed about 4,600 t of tin. The solder and the tinplating sectors continued to be the major tin consumption sectors. In 2004, Malaysia exported 28,929 t of tin metal to (in descending order of amount received) Singapore, the Republic of Korea, Japan, Taiwan, and the United States. Malaysia's imports of tin concentrates were 18,916 t in 2004, 20,183 t in 2003, and 31,788 t in 2002 (Malaysia Smelting Corp. Bhd., 2005, p. 3, 26-28, 98-99). According to domestic production and trade data, the total supply of tin in tin concentrates in the Malaysian market (usually the tin content of imported tin concentrate was about 50%) appeared to be insufficient to meet the demand for tin metal production in the country. The gap between supply and demand of tin concentrates was met either from stockpiles in Malaysia or from unreported imported tin concentrates. China was the leading tin metal producing country in the world. Owing to economic expansion, China's consumption of tin metal increased during the past several years. As a result of increased consumption, exports of tin metal from China have decreased gradually during the past several years. Indonesia and Malaysia have increased their exports of tin, which could influence the price of tin on the international market in the future.

Industrial Minerals

Cement.—In 2004, cement production continued to increase because of the continued growth in demand. The shortage of sand in Malaysia affected the cement sector. The Federal Government stopped issuing licenses to companies to dredge sand along coastal areas. Existing sand licenses issued by the Land and Cooperative Development Ministry would not be renewed when they expired because the operations posed threats to marine ecology in Malaysia. The shortage of concrete-based materials affected the construction sector (Star, The, 2004).

Malaysia's leading cement producer, Lafarge Malayan Cement Bhd., planned to increase its cement grinding capacity at its Rawang plant by 800,000 t/yr. The company also planned to move its idle cement grinding plant in Langkawi to Rawang. The addition of cement grinding capacity in Rawang could reduce the logistic costs of shipping cement from Langkawi to the mainland. Excess clinker from the company's Perak plant was exported. After completion of the grinding expansion in Rawang, excess cement in Langkawi will be exported (International Cement Review, 2004).

Mineral Fuels

Coal.—Malaysia's coal resources are located in the States of Perak, Perlis, Sabah, Sarawak, and Selangor. Coal was produced from the areas of Bintulu, Merit-Pila, Silantek, and Tutoh in Sarawak. The country has coal reserves of 1.7 billion metric tons (Gt), of which about 1.4 Gt is in Sarawak. Merit-Pila was the largest coalfield in Malaysia. Malaysia produced less than 500,000 t of coal annually, but consumed more than 5 Mt; as a result, the country imported more than 5 Mt of coal each year to meet the demand. The power-generating plants consumed about 70% of the total supply of coal (domestic production and imported) and the remaining was consumed by the cement and iron and steel sectors. Tenaga National Berhad planned to change its natural gas powerplants into coal-fired powerplants in the next several years, and the usage of gas in their powerplants was expected to decrease to 49% from 72% in 2010. Major coal-fired powerplants under construction included Tanjung Bin and Jimah; Prai Power and the second phase of Port Dickson Power were under development. The demand for coal in Malaysia was expected to increase, and because domestic coal could not meet the demand, the country was expected to increase coal imports to fill the gap. Most of imported coal was from Australia, China, and Indonesia (Minerals and Geoscience Department, 2004, p. 100).

Natural Gas and Petroleum.—Malaysia remained a net exporter of natural gas and crude oil. The average production of natural gas increased to 147 million cubic meters per day in 2004 from 142 million cubic meters per day in 2003. Production of crude oil and condensate increased to an average of 762,000 barrels per day (bbl/d) in 2004 from 738,000 bbl/d in 2003. The country exported about 50% of its natural gas in the form of LNG and crude oil and condensate production (Bank Negara Malaysia, 2005§).

Shell Malaysia (a unit of Royal Dutch/Shell Group) discovered a potential large oilfield from its Gumusut-1 exploration well, which was located off the coast of the State of Sabah. Gumusut was located in Block J, in which Shell Malaysia and ConocoPhillips Corp. of the United States each held 40% interest, and Malaysia's state-owned Petronas held the remaining 20%. The Government of Brunei awarded nearly the same areas to Shell and a consortium led by Total of France. The Malaysia Navy ordered the Total exploration team to stay away from the disputed area. The Governments of Brunei and Malaysia were in negotiations to resolve the disputed area and proposed to create a production-sharing agreement. Shell also explored in Block G (ASEAN Center for Energy, 2004§).

In 2002, Murphy Oil Corp. of the United States discovered the first deepwater oilfield in Malaysia, which was estimated to have between 400 million and 700 million barrels of recoverable reserves in Block K of Sabah. Murphy held an 80% interest in Block K, which covered more than 8 million acres. Petronas Carigali Sdn. Bhd. (a subsidiary of Petronas) held the remaining 20%. Murphy

planned to bring the oilfield onstream in 2007. In 2003, Murphy signed production-sharing contracts on Block L and Block M, in which the company held 60% and 70% interest, respectively; Petronas held the remaining interest (Petroleum Economist, 2004).

Petronas discovered a new gasfield offshore Block SK310, which is located 130 km northwest of Miri, Sarawak. The natural gas has hydrogen sulfide content of 35 parts per million and a carbon dioxide level of 7% (Petroleum Economist, 2005).

If Malaysia's economy continues to grow in the next several years, the consumption of oil and gas is expected to increase. The Asian Development Bank projected that Malaysia's GDP will increase by 5.1% in 2005, 5.3% in 2006, and 5.8% in 2007. Most of Malaysia's oil production was from shallow waters near Peninsular Malaysia. Malaysia and Thailand shared offshore prospects in the Joint Development Area, which was the important source of natural gas. Malaysia could become a net oil importer in the near future if there are no major discoveries. The Malaysian Government planned to lease more deepwater blocks to foreign investors for exploration near the States of Sabah and Sarawak (Asian Development Bank, 2005, p. 48).

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Major Source of Information

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Major Publications

Department of Statistics [Malaysia]:
Statistical Bulletin, Malaysia, monthly.
Yearbook of Statistics, Malaysia, annual.
Malaysian Chamber of Mines: Annual Report, annual.
Malaysia Tin Bulletin, monthly.
Minerals and Geoscience Department [Malaysia]:
Annual Report and Malaysia Minerals Yearbook, annual.
Monthly Statistics on Mining Industry in Malaysia, monthly.

TABLE 1
MALAYSIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2000	2001	2002	2003	2004
METALS						
Aluminum, bauxite, gross weight		123,270	64,161	39,975	5,732	2,040
Columbium-tantalum metals, struverite, gross weight		969	8,430	2,298	2,619	121
Gold, mine output, Au content[3]	kilograms	4,026	3,965	4,289	4,739	4,221
Iron and steel:						
Iron ore, gross weight		258,573	376,476	404,350	596,612	663,732
Pig iron, direct reduction iron and hot-briquetted iron	thousand metric tons	1,260	1,120	1,080	1,600	1,680
Steel, crude	do.	3,650	4,100	4,722	3,960 r	4,200 e
Lead metal, secondary[e]		35,300	38,000	40,000	40,000	40,000
Rare-earth metals, monazite, gross weight		818	643	441	795	1,683
Silver, mine output, Ag content[3]	kilograms	5	3	--	--	364
Tin:						
Mine output, Sn content		6,307	4,972	4,215	3,359	2,745
Metal, smelter		26,228	30,417	30,887	18,250	33,914
Titanium:						
Ilmenite concentrate, gross weight		124,801	129,750	106,046	95,148	61,471
Dioxide[e]		46,000	50,000	56,000	56,000	56,000
Zirconium, zircon concentrate, gross weight		3,642	3,768	5,292	3,456	6,886
INDUSTRIAL MINERALS						
Barite		7,274	649	3,082	--	--
Cement, hydraulic	thousand metric tons	11,445	13,820	14,336	17,243	22,833
Clays and earth materials	do.	79,485	29,596	23,092	23,909 r	24,221
Clays, kaolin		233,885	364,458	323,916	425,942 r	326,928
Feldspar		29,895	40,509	30,819	42,662 r	79,220
Mica		3,835	4,107	3,669	3,609	3,544
Nitrogen, N content of ammonia		604,800	726,000	847,900	909,500	842,500
Sand and gravel	thousand metric tons	21,497	15,020	19,574	17,955 r	18,371
Silica sand, peninsular Malaysia and Sarawak		446,838	575,105	447,398	533,617 r	631,402
Stone:						
Aggregate	thousand metric tons	66,670	66,996	84,934	85,142 r	51,236
Dolomite		4,030	2,850	--	--	--
Limestone	thousand metric tons	26,086	32,503	27,450	20,855 r	19,968
MINERAL FUELS AND RELATED MATERIALS						
Coal		382,942	497,733	352,513	172,820	389,176
Gas, natural:[4]						
Gross	thousand metric tons	56,929	58,751	60,791	65,173	67,530
Net[5]	do.	45,259	46,707	48,329	51,813	53,688
Liquefied natural gas	thousand metric tons	15,169	15,423	15,007 r	17,311 r	20,729
Petroleum:[4]						
Crude and condensate	thousand 42-gallon barrels	249,159	243,696	254,770	269,370	279,009
Refinery products[e, 6]	do.	135,000	142,000	144,000	142,000	144,000

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [r]Revised. -- Zero.

[1]Table includes data available through September 29, 2005.

[2]In addition to the commodities listed, a variety of crude construction materials, which include clays and stone, fertilizers, and salt, is produced, but not reported, and information is inadequate to make reliable estimates of output levels.

[3]Includes byproduct from tin mines in peninsular Malaysia and gold mines in peninsular Malaysia and Sarawak.

[4]Includes production from peninsular Malaysia, Sabah, and Sarawak.

[5]Gross less volume of reinjected and flared.

[6]Includes liquefied petroleum gas, lubricants, and naphthas.

Sources: Ministry of Primary Industry, Minerals and Geoscience Department (Kuala Lumpur), Malaysian Minerals Yearbook 2004, Monthly Statistics on the Mining Industry in Malaysia; Department of Statistics (Kuala Lumpur), Monthly Statistical Bulletin, April 2004; U.S. Geological Survey Minerals Questionnaire, 2004; and Southeast Asia Iron and Steel Institute, Steel Statistical Yearbook, 2003.

TABLE 2
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Bauxite		Johore Mining and Stevedoring Co. Sdn. Bhd. (ALCAN Ltd. of Canada, 61%, and local investors and other, 39%)	Teluk Rumania and Sg. Rengit, Johor	400
Cement[1]		Cement Industries of Malaysia Bhd. (United Engineers Malaysia Bhd., 53.97%, and others, 46.03%)	Kangar, Perlis	2,000; 1,600*
Do.		Lafarge Malayan Cement Bhd. (majority-owned subsidiary of Lafarge S.A.)	Rawang, Selangor; Kanthan, Perak, Langkawi, Kedah; and Pasir Gudang, Johor	12,800; 7,900*
Do.		Negeri Sembilan Cement Industries Sdn. Bhd. (wholly owned subsidiary of Cement Industries of Malaysia Berhad)	Bahau, Negeri Sembilan	1,400; 1,200*
Do.		Pahang Cement Sdn Bhd. (50-50 joint venture of Pahang State government and YTL Cement Berhad)	Bukit Sagu, Pahang	1,300; 1,200*
Do.		Perak-Hanjoong Simen Sdn. Bhd. (Gopeng Bhd., 45%, and Korea Heavy Industries and Construction Co. and others, 55%)	Padang Rengas, Perak	3,400; 3,000*
Do.		Tasek Corp. (publicly owned company)	Ipoh, Perak	2,300; 2,300*
Gas:				
Natural	million cubic meters per day	ExxonMobil Exploration and Production Malaysia, Inc.	Offshore Terengganu	45
Do.	do.	Sabah Shell Petroleum Co. Ltd.	Offshore Sabah	3
Do.	do.	Sarawak Shell Bhd.	Offshore Sarawak	80
Liquefied		Malaysia LNG Sdn. Bhd. (Petroliam Nasional Berhad, 65%; Shell Gas N.V., 15%; Mitsubishi Corp., 15%; Sarawak State government, 5%)	Tanjung Kidurong, Bintulu, Sarawak	8,100
Do.		Malaysia LNG Dua Sdn. Bhd. (Petroliam Nasional Berhad, 60%; Shell Gas N.V., 15%; Mitsubishi Corp., 15%; Sarawak State government, 10%)	do.	7,800
Do.		Malaysia LNG Tiga Sdn. Bhd. (Petroliam Nasional Berhad, 60%; Shell Gas N.V., 15%; Nippon Oil LNG (Netherlands) BV, 10%; Sarawak State government, 10%; Diamond Gas Netherlands BV, 5%)	do.	6,800
Gold, refined	kilograms	Specific Resources Malaysia Sdn. Bhd. (joint venture of Pahang State Development Corp. and Avocet Mining plc of the United Kingdom)	Penjom, Pahang	4,000
Iron and steel:				
Hot-briquetted iron		Amsteel Mills Sdn. Bhd. (wholly owned subsidiary of Amsteel Corp.)	Labuan Island, offshore Sabah	800
Direct-reduced iron		Perwaja Steel Sdn. Bhd. (Maju Holdings Sdn. Bhd., 51%; Lion Group, 30%; Terengganu State government, 19%)	Kemaman, Terengganu	1,200
Crude steel		Amsteel Mills Sdn. Bhd. (wholly owned subsidiary of Amsteel Corp.)	Klang, Selangor	750
Do.		Perwaja Steel Sdn. Bhd. (Maju Holdings Sdn. Bhd., 51%; Lion Group, 30%; Terengganu State government, 19%)	Kermaman, Terengganu	800
Do.		Southern Steel Bhd. (Camerlin [a member of Hong Leong Group Malaysia], 40.75%; Natsteel Ltd., 27.03; other, 32.22%)	Prai, Penang	1,200
Nitrogen, ammonia		Asean Bintulu Fertilizer Sdn. Bhd. (Petroliam Nasional Berhad, 63.5%; P.T. Pupuk Sriwidjaja Indonesia, 13%; Thai Ministry of Finance, 13%; Philippines National Development Co., 9.5%; Singapore Temasek Holdings Pte. Ltd., 1%)	Bintulu, Sarawak	395
Do.		PETRONAS Fertilizer Kedah Sdn. Bhd. (wholly owned subsidiary of Petroliam Nasional Berhad)	Gurun, Kedah	378
Do.		PETRONAS Ammonia Sdn Bhd. (wholly owned subsidiary of Petroliam Nasional Berhad)	Kerth, Terengganu	370
Petroleum, crude	thousand 42-gallon barrels per day	ExxonMobil Exploration and Production Malaysia, Inc.	Offshore Terengganu	390
Do.	do.	Sabah Shell Petroleum Co. Ltd.	Offshore Sabah	100
Do.	do.	Sarawak Shell Bhd.	Offshore Sarawak	184

See footnote at end of table.

TABLE 2--Continued
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum, crude--Continued:	thousand 42-gallon barrels per day	Sarawak Shell Bhd.	Offshore Sarawak	184
Do.	do.	PETRONAS Carigali Sdn. Bhd.	Offshore Terengganu	22
Do.	do.	Murphy Sarawak Oil Co. Ltd.	Offshore Sarawak	15
Tin:				
Concentrate		Delima Industries Sdn. Bhd.	Dengkil, Selangor	1.1
Do.		Maiju Sama Sdn. Bhd.	Puchong, Selangor	1.6
Do.		New Lahat Mines Sdn. Bhd.	Lahat, Perak	0.3
Do.		Omsam Telecommunication Sdn. Bhd.	Bakap and Batu Gajah, Perak	0.5
Do.		Rahman Hydraulic Tin Bhd.	Klian Intan, Perak	1.2
Do.		S.E.K. (M) Sdn. Bhd.	Kampar, Perak	0.4
Do.		Tasek Abadi Sdn Bhd.	Senudong and Kampar, Perak	0.5
Refined		Malaysia Smelting Corp. Bhd. (The Straits Trading Co. Ltd., 37.44%; Malaysia Mining Corp., 37.44%; others, 25.12%)	Butterworth, Penang	35
Titanium, dioxide		Huntsman Tioxide Sdn. Bhd. (a subsidiary of Huntsman Tioxide of the United Kingdom)	Kemaman, Terengganu	56

[1]All companies operated integrated plants. Annual capacity is for cement production; an asterisk (*) denotes the clinker capacity.